

REMARKS

Applicants respectfully request reconsideration and allowance of the subject application in view of the foregoing amendments and the following remarks.

Claims 1, 3-7, and 9-16 are presented for consideration, with Claims 1 and 10 being independent. Claim 10 has been withdrawn from consideration. Claims 1, 7, and 16 are amended herein to more clearly recite the features of the present invention. Claims 2 and 8 are cancelled without prejudice to or disclaimer of the subject matter contained therein. Applicants respectfully submit that no new matter has been added.

Applicants note with appreciation that the restriction requirement is withdrawn with respect to all claims except Claim 10, which remains withdrawn from consideration.

The Office Action noted that Claim 16 included a typographical error. That error has been corrected by the current amendment to Claim 16.

Applicants note with appreciation that Claim 3 is indicated as containing patentable subject matter and would be allowed if placed in independent form. This claim remains in dependent form, however, as it is respectfully submitted that parent Claim 1 is patentable in its own right for the reasons set forth below.

Claim 7 was rejected under 35 U.S.C. § 112, second paragraph, as allegedly being indefinite. Without conceding the propriety of the rejection, Applicants believe this rejection is now moot in light of the current amendment to Claim 7. Reconsideration and withdrawal of the 35 U.S.C. § 112, second paragraph rejection are respectfully requested.

Claim 2 was rejected under the judicially created doctrine of obviousness-type double patenting as allegedly being unpatentable over Claims 1-27 of U. S. Patent No. 6,612,691 (Koitabashi et al.). Claim 2 is cancelled herein, therefore, this rejection is now moot.

Claims 1, 4-6, 9, 11-13, 15 and 16 were rejected under 35 U.S.C. § 103(a) as allegedly being obvious over Koike et al. (U.S. Patent No. 5,608,438). In addition, Claims 8 and 14 were rejected under 35 U.S.C. § 103(a) as allegedly being obvious over Koike et al. in view of Yamamoto et al. (EP 588,241). These rejections are respectfully traversed.

Applicants' invention as set forth in Claim 1 relates to a recording method for recording on a recording material using an ink containing a coloring material and a processing liquid for making the coloring material insoluble or, as amended, coagulate. The method includes a step of ejecting onto the recording material the ink, the ink having a Ka value of a first value, and a step of applying the processing liquid onto the ink ejected on the recording material, the processing liquid having a Ka value of a second value larger than the first value. Additionally, the processing liquid is applied onto the recording material after a rapid swell start point is passed after the penetration of the ink into the medium so that the processing liquid is overlapped with the ink ejected on the recording material.

Applicants' present invention as recited in independent Claim 1 is advantageous in that by applying the processing liquid onto the ink ejected on the recording material, the density of the ink can be increased without suffering a deterioration in the ink's wear resistance, which solves a dilemma posed with the conventional use of a processing liquid for making the coloring material of the ink insoluble or coagulate. Conventionally, use of the processing liquid advantageously increases the density ink, but also disadvantageously decreases the wear resistance of the ink.

Koike et al. is directed to an ink jet recording method which can record color images with no color ink spread and with sharp characters/line images. Koike et al. discloses that a first color ink of a low penetration rate and a Ka value of not more than $0.5 \text{ ml/m}^2 \cdot \text{ms}^{1/2}$ is

jettted for printing to the recording medium. A second color ink with a high penetration rate and a Ka value of not less than $1.0 \text{ ml/m}^2 \cdot \text{ms}^{1/2}$ is then jettted for printing to the recording medium.

Koike et al., however, does not teach or suggest at least use of a processing liquid for making the coloring material of the ink insoluble or coagulate, as recited in Claim 1. While the Examiner takes the position that the term “processing liquid” is broad enough to include inks, Claim 1 clearly recites that processing liquid makes the coloring material insoluble or coagulate. The second color ink in Koike et al. is not disclosed as being for making the coloring material in the first ink insoluble or coagulate.

Therefore, Koike et al. fails to teach or suggest Applicants’ claimed invention. Thus, reconsideration and withdrawal of the rejection of Claims 1, 4-6, 9, 11-13, 15, and 16 under 35 U.S.C. § 103 are respectfully requested.

Yamamoto et al. is directed to a set of ink-jet ink with reduced bleed. The ink set has a black ink having a surface tension of not less than 40 dyne/cm, the black ink including a first dye and at least one color ink having a surface tension of not more than 40 dyne/cm, the at least one color ink including a second dye which is rendered insoluble by the first dye when the black ink and the at least one color ink are mixed. Yamamoto et al. was cited for its teaching of using inks of opposite polarities. Yamamoto et al., however, is not understood to teach or suggest use of a processing liquid for making the coloring material of the ink insoluble or coagulate as set forth in Claim 1. Also, like Koike et al., Yamamoto et al. is not understood to teach, suggest, or provide any motivation for obtaining the above-noted advantage of the present invention.

Therefore, the proposed combination of Koike et al. and Yamamoto et al., even if proper, still fails to teach or suggest Applicants' claimed invention. Thus, reconsideration and withdrawal of the rejection of claim 8 under 35 U.S.C. § 103 are respectfully requested.

Accordingly it is submitted that Applicants' invention as set forth in independent Claim 1 is patentable over the cited art. In addition, dependent Claims 3-7, 9, and 11-16 set forth additional features of Applicants' invention. For example, Claim 6 sets forth that the ink contains pigment, and Claim 11 sets forth that the K_a of the processing liquid is not less than 5 ($\text{ml.m}^{-2}.\text{msec}^{-1/2}$). Also, Claim 16 sets forth that a concentration of a surface-active agent in the ink is less than the critical micelle concentration of the surface-active agent in pure water. Independent consideration of the dependent claims is respectfully submitted.

For the foregoing reasons, Applicants submit that the claims are allowable over the prior art of record. Applicants submit that this Amendment places the application in condition for allowance. Favorable consideration, withdrawal of the rejections and issuance of an early Notice of Allowance are requested.

Applicants' undersigned attorney may be reached in our Washington, D.C. office by telephone at (202) 530-1010. All correspondence should continue to be directed to our address given below.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Mark A. Williamson", written over a horizontal line.

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